

REMARKS

This paper is in response to the Office Action dated July 31, 2003.

On August 8, 2003, Applicant's undersigned attorney telephoned the Examiner to point out that the Office Action of July 31 did not address Applicant's claims 15 to 28 as presented in the Amendment filed by mailing on July 12, 2003, but provided an examination of claims 1 to 14 which were cancelled by that Amendment. A copy of the July 12 Amendment is enclosed. Applicant expected to receive a supplementary Office action in accordance with MPEP 714.05, but this has not been received. Accordingly Applicant will address the Office Action of July 31, 2003 with respect to the Specification and Drawings and await the Examiner's action on pending claims 15 to 28.

With respect to the Examiner's Objections set forth in Paragraph 1 of the Office Action, Applicant has amended Paragraph [0037] to refer to reference numeral 33. Paragraph [0042] is amended to refer to Figure 4. The additional material in Paragraph [0042] referring to Figure 4 is previously set forth, without reference numbers, at Paragraphs [0027] and [0028] accordingly no new matter is added by this amendment. Applicant traverses the objection that reference numeral 2 is not shown in the drawings by pointing out that this reference numeral is in Figure 3.

Applicant responds to the Objection under 37 CFR 1.83(a), set forth in Paragraph 3 of the Office Action, by pointing amendment of Figure 4, submitted herewith, to include ribs that run parallel to the centerline. Applicant further points out that Figure 3 illustrates the feature that the thickness of the face diminishes toward the rim. Figure 4 illustrates the tunnel like recess of rib 29 at the intersection with laths 27. The strings 17 are illustrated in side view in Figure 1. Applicants traverse the objection that eight or fifteen strings need to be illustrated on grounds

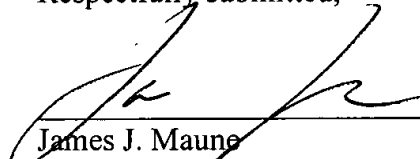
that the side view of the strings constitutes a graphic drawing symbol, and specific illustration of the number of strings is not essential for a proper understanding of the invention as provided in 37 CFR 1.83(a).

In response to the Examiner's objection to the disclosure in Paragraph 3, applicants have set forth a clarifying amendment to Paragraph [0042] which is consistent and clarifies the existing statement therein that the two parts are on opposite sides of the end piece 15.

In response to the Examiner's objection to claim 9, which is cancelled but corresponds to claim 23, abutments 34 are illustrated for rib 29 in amended Figure 4, and referred to in amended Paragraph [0042]. The added language corresponds to Paragraph [0027] of the specification.

Applicant respectfully traverses the Examiner's rejection of claims 1 to 14 on grounds that these claims have been cancelled.

Respectfully submitted,



James J. Maune
PTO Reg. No. 26,946
Attorney for Applicant
(212) 408-2566



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Burguete et al.
Serial No. : 10/069,653
Filed : February 26, 2002
For : LUTE

**PRELIMINARY AMENDMENT AND
RESPONSE TO NOTIFICATION OF MISSING
REQUIREMENT UNDER 35 U.S.C. 371**

I hereby certify that this paper is being deposited with the
United States Postal Service in an envelope addressed to: Assistant
Commissioner for Patents, Washington, D.C. 20231

July 12, 2002
Date of Deposit

James J. Maune
Attorney Name

26,946
PTO Registration No


Signature

July 12, 2002
Date of Signature

EXPRESS MAIL LABEL NO. ET346776880US

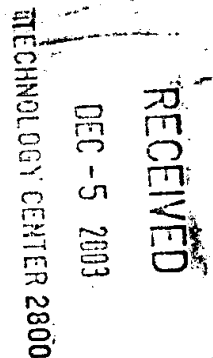
Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

In response to the Notice to File Missing Parts, Applicants submit herewith a translation
of the application as filed. Also submitted is a translation of the Preliminary Examination
Report.

Please amend the Application as follows:



IN THE SPECIFICATION:

Please substitute the attached Substitute Specification and Abstract for the translation of this application. The Substitute Specification conforms to U.S. Practice and places the application in better English. The Substitute Specification also make reference to the amended drawings.

IN THE DRAWINGS:

With the consent of the Primary Examiner it is requested that Fig. 3 of the application be amended as illustrated in red on the attached copy thereof and that Figure 4 be added to the application. These changes are made to comply with 37 C.F.R. § 1.83(a). No new matter is added.

IN THE CLAIMS:

Cancel Claims 1 to 14.

Add claims 15 to 28 as follows:

15. A lute comprising a neck, a bulging sound box tapering down to a virtual point and attached to said neck at said virtual point, a peg box at an end of said neck remote from said sound box, and strings stretched between said peg box and an end piece, said sound box including a vaulted back having a planar rim that is curved outwardly from one side of said neck in a continuous curve to the other side of said neck and a face having a longitudinal centerline and connected to said rim of said back, said face including transverse ribs on an inside surface and said end piece mounted on an outside surface in a longitudinal portion thereof corresponding to the longitudinal third of said face remote from said neck, said face having at least one aperture

between said inside and outside surfaces in a longitudinal half thereof nearest said neck, wherein at least a portion of said face, including said end piece, is vaulted outward from said planar rim by at least 2 mm., and wherein said face includes an area at a longitudinal end thereof remote from said neck which has a longitudinal length of approximately twice a longitudinal distance between said end piece and said remote longitudinal end of said face and which area is devoid of transverse ribs.

16. A lute as specified in claim 15 wherein said area of said face includes laths extending in a generally longitudinal direction and arranged symmetrically about said longitudinal centerline.

17. A lute according to claim 16 wherein said laths are arranged at acute angles with respect to said centerline.

18. A lute according to claim 16 wherein the laths are in a fan configuration having central axes intersect at an imaginary point on said centerline of the face.

19. A lute according to claim 16 wherein the laths run parallel to said centerline.

20. A lute according to claim 16 wherein an even number of laths is provided.

21. A lute according to claim 16 wherein an odd number of laths is provided.

22. A lute according to claim 15 wherein said face has a thickness which diminishes toward said rim at least in area devoid of transverse ribs.

23. A lute according to claim 15 wherein said transverse ribs have ends which rest on abutments.

24. A lute according to claim 16 wherein at least two of said laths extend below at least one transverse rib which lies closest to the rib-free area, wherein said at least one transverse rib comprises a tunnel-shaped recess through which said laths pass without contact between said laths and said transverse ribs.

25. A lute according to claim 16 wherein said neck includes a fingerboard having frets and wherein said fingerboard and said frets extend onto a segment of said.

26. A lute according to claim 25 wherein said face is reinforced on its inside with a piece of hardwood in the region of said face segment.

27. A lute according to claim 15 wherein eight strings (17) are strung, said strings being tuned C - D - E - A - d - g - h - e'.

28. A lute according to claim 15 wherein fifteen single strings are strung, said strings being tuned G - A - B - C - D - E - F - G - A - B - d - f - a - d' - f, or G - A - B - C - D - E - F - G - A - B - d - f - a - d' - g'.

IN THE DRAWINGS:

Please amend Figure 4 as shown in red in the attached copy of the drawing.

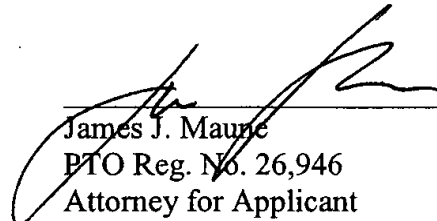
REMARKS

Applicants submit herewith a translation of the application as filed and a proposed
Substitute Specification, Drawing amendment and Abstract in compliance with U.S. Practice.

Claims 1 to 14 are cancelled. Claims 15 to 28 conforming to U.S. practice are presented.

A Declaration and Power of Attorney are submitted herewith.

Respectfully submitted,



James J. Maune
PTO Reg. No. 26,946
Attorney for Applicant
(212) 408-2566

Translation

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

7

Applicant's or agent's file reference D700190WO		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE00/02905	International filing date (day/month/year) 25 August 2000 (25.08.00)	Priority date (day/month/year) 26 August 1999 (26.08.99)	
International Patent Classification (IPC) or national classification and IPC G10D 1/00			
Applicant BURGUETE, André			

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 21 March 2001 (21.03.01)	Date of completion of this report 20 July 2001 (20.07.2001)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE00/02905

I. Basis of the report

1. This report has been drawn on the basis of (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

- ☐ the international application as originally filed.
- ☒ the description, pages 1-10, as originally filed,
pages _____, filed with the demand,
pages _____, filed with the letter of _____,
pages _____, filed with the letter of _____.
- ☒ the claims, Nos. 1-14, as originally filed,
Nos. _____, as amended under Article 19,
Nos. _____, filed with the demand,
Nos. _____, filed with the letter of _____,
Nos. _____, filed with the letter of _____.
- ☒ the drawings, sheets/fig 1/3-3/3, as originally filed,
sheets/fig _____, filed with the demand,
sheets/fig _____, filed with the letter of _____,
sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims	1-14	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

2. Citations and explanations**1. Reference is made to the following document:**

D1: US-A-4 291 606.

2. The subject matter of Claim 1 meets the requirements of PCT Article 33(1) for the reasons given below.

Document D1 (column 3, line 33 - column 4, line 19; Figures 1, 2 and 8), which is considered to be the closest prior art for the subject matter of the present application and to which the following references signs placed between parentheses refer, discloses those features considered to be significant in the preamble of Claim 1, specifically:

A lute
 with a sound box (20) comprising a rear section (36) and sound board (22)
 and with a neck (40) that has a finger board (38) including frets (37) and bearing a peghead (48),
 where the sound board (22) has straight braces (60) and transverse braces (61) on its

underside (see Figure 8; column 3, line 63 - column 4, line 3) and a saddle (26) on its top side (see Figures 1 and 2), and features at least one sound hole (34) between the underside and top side, and where a number of strings (30) are strung between the peghead (48) and the saddle (26).

The subject matter of Claim 1 differs substantially from the disclosure in document D1 in that the sound board, including the saddle, is curved outwards, and that a surface without any transverse braces is provided on the underside of the sound board. Said surface can either be designed without any straight braces or have straight braces arranged symmetrically in relation to a centre line.

The subject matter of Claim 1 is therefore novel (PCT Article 33(2)).

As specified in the description of the present application (page 4, lines 20-25), the problem addressed by the present invention is to develop the conventional lute such that it is accessible to contemporary guitarists while maintaining its sound qualities.

The solution proposed in Claim 1 of the present application in relation to the above problem involves an inventive step (PCT Article 33(3)) for the following reasons:

There is little reference in prior art to the problem addressed by the invention. For example, document D1 is primarily concerned with a device

that enhances the lute by allowing the identification of notes (cf. column 1, lines 46-48).

It is therefore unsurprising that prior art contains no reference that would suggest the teaching of the invention in an obvious manner to a person skilled in the art.

Admittedly, US-A-4 031 798 addresses the problem of making it easier to handle a lute such that it corresponds to the use of a guitar. It also aims to maintain the traditional sound qualities of the lute; column 2, lines 30-33.

However, the problem is solved in this case using an inhomogeneous sound box that has sound-transmitting properties which are different when measured in a radial direction compared to the sound-transmitting properties measured circumferentially. This can be considered to be an alternative solution to the teaching of the invention. However, the sound board (20) of this lute (cf. Figure 3) is flat like that of other known stringed instruments.

None of the other documents cited in the international search report and classified generally as technological background material is more relevant to the subject matter of Claim 1 than document D1 cited above.

It should also be stated that even a combination of lute and (concert) guitar as known from DE-U-88 08 073 cited in the description of the application (page 4, line 16) does not suggest the subject matter of Claim 1 to a person skilled in the

art, because such guitars also have a flat sound board.

The stringed instrument known from US-A-1 361 182 cited in the introductory part of the description (page 4, paragraph 2) features a sound box with two opposite sides (9) that are actually curved outwards.

However, the saddle of this instrument is not curved outwards, nor does the sound board feature straight braces or transverse braces on its underside. Furthermore, since this musical instrument relates to a mandolin, this document would not be considered by a person skilled in the art and seeking a solution to the aforementioned problem, which is specifically restricted to lutes and guitars.

Consequently, the subject matter of Claim 1 is not suggested by the available prior art and therefore involves an inventive step within the meaning of PCT Article 33(3).

3. Claims 2 to 14 are dependent on Claim 1 and therefore also meet the PCT requirements for novelty and inventive step.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/DE 00/02905

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Reference signs placed between parentheses should be assigned to the features in the preamble of Claim 1; PCT Rule 6.2(b).

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted with Initial Filing **OR** ☐ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Number	35040-PCT-USA-066340.0143
First Named Inventor	Burgueta et al.
COMPLETE IF KNOWN	
Application Number	10/069,653
Filing Date	February 26, 2002
Group Art Unit	NOT YET ASSIGNED
Examiner Name	NOT YET ASSIGNED

As a below named inventor, I hereby declare that:

my residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

LUTE

(Title of the invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) 02/26/2002

as United States Application Number or PCT International

Application Number 10/069,653

and was amended on (MM/DD/YYYY)

(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
199 40 486.0	GERMAN	08/26/1999	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

DECLARATION — Utility or Design Patent Application

Claim for Benefit of Prior U.S. Provisional Application(s)

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

Provisional Application Number	Filing Date

Claim for Benefit of Earlier U.S./PCT Application(s) under 35 U.S.C. 120

(complete this part only if this is a divisional, continuation or C-I-P application)

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior applications(s) and the national or PCT international filing date of this application:

Application Number	Filing Date	Status (patented, pending, abandoned)

DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☒ Customer Number or Bar Code Label 21003 OR ☒ Correspondence address below

Name

Address

City

State

ZIP

Country

Telephone

Fax

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

NAME OF SOLE OR FIRST INVENTOR:

☐ A petition has been filed for this unsigned inventor

ANDRE

BURGUETE

Given Name

Family Name

(first and middle (if any))

or Surname

Inventor's
Signature*Andre Burguete*30.6.2002
Date

DRESDEN

Residence: City

State

GERMANY

Country

GERMANY

Citizenship

Mailing Address
Thomas-Muntzer-Platz 4

Dresden

City

State

01307

ZIP

Germany

Country

NAME OF SECOND INVENTOR:

☐ A petition has been filed for this unsigned inventor

BENNO

STREU

Given Name

Family Name

(first and middle (if any))

or Surname

Inventor's
Signature

Date

Turnseestrasse 1

Residence: City

State

GERMANY

Country

GERMANY

Citizenship

Mailing Address

Freiburg im Breisgau

City

State

79102

ZIP

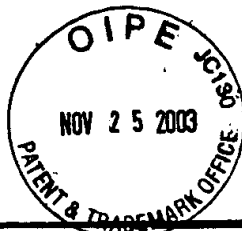
Germany

Country

☐ Additional Inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.

BAKER BOTTS LLP

Please type a plus sign (+) inside this box →

**DECLARATION****ADDITIONAL INVENTOR(S)**
Supplemental Sheet
Page ____ of ____

Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])		Family Name or Surname	
GUNTER		MARK	
Inventor's Signature <i>Gunter Mark</i>		Date 28.06.2002	
BAD RODACH Residence: City	State	GERMANY Country	GERMANY Citizenship
Mailing Address			
Elsa 47			
Mailing Address			
Bad Rodach City	State	98476 ZIP	Germany Country
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])		Family Name or Surname	
Inventor's Signature		Date	
Residence: City	State	Country	Citizenship
Mailing Address			
Mailing Address			
City	State	ZIP	Country
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])		Family Name or Surname	
Inventor's Signature		Date	
Residence: City	State	Country	Citizenship
Mailing Address			
Mailing Address			
City	State	ZIP	Country

DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☒ Customer Number or Bar Code Label 21003 OR ☒ Correspondence address below

Name

Address

City

State

ZIP

Country

Telephone

Fax

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

NAME OF SOLE OR FIRST INVENTOR :

☐ A petition has been filed for this unsigned inventor

ANDRE

BURGUETE

Given Name

(first and middle (if any))

Family Name

or Surname

Inventor's
Signature

Date

DRESDEN

Residence: City

State

GERMANY

Country

GERMANY

Citizenship

Mailing Address Thomas-Muntzer-Platz 4

Dresden

City

State

01307

ZIP

Germany

Country

NAME OF SECOND INVENTOR:

☐ A petition has been filed for this unsigned inventor

BENNO

STREU

Given Name

(first and middle (if any))

Family Name

or Surname

Inventor's
Signature

June 28, 2002

Turnseestrasse 1

Residence: City

State

GERMANY

Country

GERMANY

Citizenship

Mailing Address

Freiburg im Breisgau

City

State

79102

ZIP

Germany

Country

☐ Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.



Please type a plus sign (+) inside this box →

**POWER OF ATTORNEY OR
AUTHORIZATION OF AGENT**

Application Number	10/069,653
Filing Date	February 26, 2002
First Named Inventor	Burguete et al.
Group Art Unit	NOT YET ASSIGNED
Examiner Name	NOT YET ASSIGNED
Attorney Docket Number	A35040-PCT-USA-066340.0143

I hereby appoint:

- ☒ Practitioners at Customer Number **21003**
- OR
- ☐ Practitioner(s) named below:

Place Customer
Number Bar Code
Label here

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

- ☒ The above-mentioned Customer Number.

OR

☐ Firm or
Individual Name

Address

Address

City

Country

State

Zip

Telephone

Fax

I am the:

- ☒ Applicant/Inventor.

- ☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

SIGNATURE of Applicant or Assignee of Record

Name	BENNO STREU
Signature	<i>Benno Streu</i>
Date	June 11, 2002

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ Total of _____ forms are submitted.

BAKER BOTTS LLP

Please type a plus sign (+) inside this box →

**POWER OF ATTORNEY OR
AUTHORIZATION OF AGENT**

Application Number	10/089,653
Filing Date	February 26, 2002
First Named Inventor	Burguete et al.
Group Art Unit	NOT YET ASSIGNED
Examiner Name	NOT YET ASSIGNED
Attorney Docket Number	A35040-PCT-USA-066340.0143

I hereby appoint:

☒ Practitioners at Customer Number

21003

Place Customer
Number Bar Code
Label here☐ Practitioner(s) named below:

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

☒ The above-mentioned Customer Number.

OR

☐ Firm or
Individual Name

Address

Address

City

State

Zip

Country

Telephone

Fax

I am the:

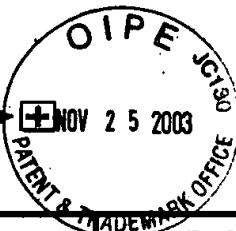
☒ Applicant/Inventor.☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).**SIGNATURE of Applicant or Assignee of Record**

Name	ANDRE BURGUETE
Signature	<i>Andre Burguete</i>
Date	7.6.2002

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ Total of _____ forms are submitted.

Please type a plus sign (+) inside this box


**POWER OF ATTORNEY OR
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Application Number	10/089,653
Filing Date	February 26, 2002
First Named Inventor	Burguete et al.
Group Art Unit	NOT YET ASSIGNED
Examiner Name	NOT YET ASSIGNED
Attorney Docket Number	A35040-PCT-USA-066340.0143

I hereby appoint:

☒ Practitioners at Customer Number

21003

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OR

☐ Practitioner(s) named below:

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

☒ The above-mentioned Customer Number.

OR

☐ Firm or
Individual Name

Address

Address

City

State

Zip

Country

Telephone

Fax

I am the:

☒ Applicant/Inventor.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/98).

SIGNATURE of Applicant or Assignee of Record

Name

GUNTER MARK

Signature

Date

16.6.2002

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

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PATENT COOPERATION TREATY

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[Translation from the German]

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Lute

The invention relates to a lute having a bulging sound box tapering to a virtual point and a neck attached to the so-called stock or upper block to one side of the point. The neck comprises a fingerboard furnished with frets. At its free end, the neck bears a peg box. The sound box consists of the vaulted back of the lute, its rim always curved outward on the way from one side of the neck to the other and lying in a plane. Besides, the sound box comprises a face whose edge is connected to the rim of the back. The face, on its under side towards the back of the lute, is provided with spreaders or fan beams, hereinafter referred to as laths, and transverse ribs. On its top, opposed to the under side, the face is furnished with a tailpiece, connected to the third of the face centerline farthest removed from the neck and in its lengthwise extent transverse to the centerline. Between the peg box and the tailpiece, a plurality of strings is stretched. In the half of the centerline near the neck, in the region of the strings, one or more apertures are made between the upper and under side of the face.

In Claus Martius, *Leopold Widhalm und der Nürnberger Lauten- und Geigenbau im 18. Jh.*, a publication of the Institute for Synthetics Technology and Conservation in the Germanic National Museum, vol. 4, Verlag Erwin Bochinski 1996, we have the latest stage of development of the lute in the 18th Century. A lute, then, has a bulging sound box tapering down to a virtual point, where a neck is attached. As part of the generally

known prior art, the neck comprises a fingerboard furnished with frets and bearing a peg box at its free end.

Concerning the lute dating from the 18th Century, it is known further that the sound box consists of the vaulted back of the lute, its rim always curved outward on the way from one side of the neck to the other. The edge of the back lies in a plane. The back of the lute is covered with a face whose edge is connected to the rim of the back.

The face, like almost all parts of the lute, is made of wood. The direction of the grain of the face is parallel to its centerline. This means that new and old wood in the face form nearly straight stripes, substantially parallel to the centerline of the face.

The familiar lute is provided with seven transverse ribs, lying transverse to the centerline and hence in particular transverse to the grain of the wood of the face. Thus, the preponderant area of the under side of the face is provided with transverse ribs. Only in about the quarter of the area of the under side away from the neck are fan ribs arranged. The centerlines of these fan ribs have -- if any -- a common point of intersection, located in the third of the centerline of the face away from the neck.

Specifically, an approximately common point of intersection lies in the neighborhood of a tailpiece arranged on the top of the face. In fact, this tailpiece is located in the third of the face centerline farthest removed from the neck. It is connected to the face on this centerline and in its lengthwise extent transverse to the centerline. Between the peg box and the tailpiece, several strings are stretched. The classic stringing consists of 13 strings tuned A - B - C - D - E - F - G - A - d - f - a - d' - f'. The first ten of these strings are double. Only the d' and f' strings are single.

From José L. Romanillos, *Antonio de Torres, Ein Gitarrenbauer - Sein Leben und Werk*, Verlag Erwin Bochinski, we learn of Antonio de Torres' construction of about

1850, still used for concert guitars today. Such a guitar comprises a face and a back, connected to each other by a frame. The frame has a pronounced waist, so that both face and back follow this conformation. In the neighborhood of the waist, a transverse rib is arranged. In addition to two more transverse ribs in the part of the face near the neck, this known guitar is also provided with two oblique laths in the part distant from the neck. Between these oblique laths and the ribs in the waist area of the guitar, additional laths or so-called fan ribs are arranged, the parts designated as laths occupying only about 1/10 of the cross-sectional area of the parts referred to as ribs. About in the middle between waist and far end of the guitar, the end piece is attached to the top of the face. Between the end piece and the peg box located at its free end, six strings tuned E - A - d - g - h - e' are stretched.

The present-day guitar, developed in Spain in the middle of the 19th Century, is undoubtedly one of the most popular musical instruments of the age.

Nevertheless, for European music it represents only a stand-in for the lute.

Since the 15th Century, the lute has become one of the most important tonal implements of western musical literature. Many famed composers left works behind that had been written for the lute. But these works today can hardly or only inadequately be rendered on the guitar acting as stand-in, for which reason they have largely lapsed into oblivion.

The reason for the displacement of the lute from today's orchestras is to be found in that nearly all orchestral instruments have accomplished a definite development in the past few centuries, while the lute has not. As a result, the lute lacks volume, it is very complicated to play, has limited expressiveness and an antiquated notation.

In printed source US 1,361,182, a stringed instrument is described that comprises a body having a substantially closed frame around an upper and an under side. However, the upper and under sides are each convexly vaulted. This instrument has no transverse ribs or laths, and the body departs from the typical lute shape, so that this instrument will yield a sound differing distinctly from that of the lute.

German Utility Design G 88 08 073.0 describes an instrument representing the structure of a guitar as described above.

The object of this invention, then, is to lend the lute a conformation such that it will meet modern concert conditions and become accessible, while retaining its outstanding tonal properties, to present-day guitarists, thus making possible a reintegration of the lute into the orchestral apparatus of today.

According to the invention, this object is accomplished in that the face of the lute, including the end piece [reading *Saitenhalter* for *Lautenhalter*], is vaulted outward, the greatest distance of the vaulted face above the plane being at least 2 mm. Besides, on the under side of the face, a space clear of transverse ribs is provided, corresponding to a first segment, say between the end piece and the part of the rim away from the neck, and a second segment adjacent to the first and of about the same size between the mutually opposed rim segment. Thus, the area free from transverse ribs is either at the same time a lath-free area, or provided with laths arranged in central symmetry. By virtue of the face curvature, the lute is endowed with a stability dispensing with any heavy stiffening of the face. It thus becomes possible to set this face area in vibration more readily, improving the access of sound to the instrument.

Ideally, the area on the under side of the face located below the end piece should have little if any lathing, yet not impeding acoustic access or propagation.

In a favorable embodiment of the invention, provision is made so that the lathing, if present, consists of laths running substantially in the direction of lengthwise extent of the centerline.

It may be so configured that the laths run at an acute angle to the direction of the lengthwise extent of the centerline. What is meant here by the run of the laths is that their mid-length lines make at most an angle of less than 45° with the centerline.

In a possible embodiment of the invention, provision is made for the laths to run fan-shaped in such manner that their mid-length axes intersect at an imaginary point on the centerline of the face or its prolongation towards the neck.

Alternatively, it is also possible that the laths may run parallel to the centerline.

In another embodiment of the invention, an even number of laths is provided. The effect of this is to leave the centerline unlathed.

In another embodiment of the invention, an odd number of laths is provided.

Since the laths are in principle arranged symmetrically to the centerline of the face, an odd number of laths will ensure that the centerline itself is always lathed.

As odd numbers, the numbers three, five, seven and nine are especially suitable numbers of laths.

In an advantageous embodiment of the invention, provision is made for the thickness of the face, at least in the region of the area free from transverse ribs, to diminish towards the edge. This will achieve a higher fundamental component of bass sounds.

In principle, such a lathing will make possible a more uniform transmission of sound from the end piece to the face.

In still another embodiment of the invention, provision is made for the ends of the transverse ribs to rest on abutments (brackets).

The invention may also be further developed in that at least two laths run under, without contact, at least that transverse rib which lies closest to the unribbed area. This is accomplished in that the rib comprises a tunnel-shaped recess at the intersection between rib and lath. This avoids contact between lath and rib, and affords passage of sound by way of the laths also into that part of the area which is provided with ribs.

In still another embodiment of the invention, provision is made for the fingerboard to be prolonged by a face segment on the face. On this segment, the arrangement of the frets is continued. Owing to this arrangement, it is possible for the higher strings to be playable with higher tones as well.

In this embodiment, it is expedient to reinforce the face in the neighborhood of the face segment with a piece of hardwood on its under side. For in the first place, this enhances the mechanical stability of the face in this area, which is expedient, since playing of the strings will exert a not inconsiderable pressure on this part of the face. In the second place, it also strengthens the acoustic access of the strings by way of the face, since just when the higher strings are played with higher tone, the oscillatory bulk of the strings and hence their volume is very low, especially if the face is yielding in this segment.

In yet another embodiment of the invention, provision is made for eight strings to be stretched on the lute, with tuning C - D - E - A - d - g - h - e'. With such a stringing, it becomes possible to play all guitar music since 1800, as well as modern music. If in addition, the g-string is tuned down a half-step to fis, it becomes possible also to play all the lute music from 1450 to 1630.

Alternatively to this stringing, it is possible to string the lute with fifteen single strings, tuned G - A - B - C - D - E - F - G - A - B - d - f - a - d' - f', or else G - A - B - C - D - E - F - G - A - B - d - f - a - d' - g'. Such a stringing yields the possibility of playing the entire lute music in the period between 1630 and 1800, parts of the guitar repertory, music of the 19th and 20th Centuries, parts of the lute music repertoires from 1450 to 1630, as well as present-day compositions.

The invention will now be illustrated in more detail in terms of an embodiment by way of example. In the accompanying drawings,

Fig. 1 shows a side view of a lute according to the invention,

Fig. 2 shows a top view of the under side of the face of the lute according to the invention, and

Fig. 3 shows a longitudinal section of the lute according to the invention.

As shown in the drawings, the lute 1 comprises a bulging sound box 2. This is so shaped that it tapers down to a virtual tip 3. At the tip 3, a neck 4 is attached. This neck 4 comprises a fingerboard 5, provided with frets not explicitly shown. At its free end, the neck 4 bears a peg box 6.

The sound box 2 itself consists of a vaulted lute back 7. The rim 8 of the back 7 is always curved outward on the way from one side 9 of the neck 4 and its other side 10. Also, the rim 9 lies on a plane, indicated by reference numeral 11 in Fig. 3. Further, the sound box 2 consists of a face 12 whose edge 13 is connected to the rim 8 of the back 7.

On its top 14, the face 12 is provided with an end piece 15. The end piece 15 is arranged on a centerline 16 of the face 12, to wit, in its lengthwise extent transverse

to the centerline 16. In this position, the end piece 15 is connected to the face 12, for example by means of a bonded connection.

Between the peg box 6 and the end piece 15, several strings 17 are stretched. On the neck half of the centerline 16, in the region of the strings 17, an aperture 18 is made in the face 12, closed with a rose 19 in such manner as to form numerous small openings.

As may be seen especially in Fig. 3, the face 12 including the endpiece 15 is vaulted over a so-called camber 20. This camber, in the embodiment of this example, amounts to 2 mm or more.

On the under side of the face 12, an area 21 free from transverse ribs is provided. This ribless area 21 consists of first part 22 and a second part 23. The first part extends between the end piece 15 and the portion 24 of the rim 13 away from the neck. The second part 23 borders on the first part 22 and is about the same size as the first part 22. The second part extends between mutually opposed edge portions 25 and 26.

On the area 21 free from ribs, laths 27 are arranged with central symmetry. Their mid-length axes 28 intersect at an imaginary point on the prolongation of the centerline 16 towards the neck 4.

All told, seven laths 27 are provided in the embodiment by way of example. However, an odd number of laths 27 is also possible. In the remaining area of the under side of the face, five transverse ribs 29 are arranged. The rose 19 is secured against being pushed in by small safety ribs 30.

In manner not shown in detail, the fingerboard 5 is prolonged by a face segment on the face 12. The face segment is fretted. As may be seen in Fig. 3, the face 12 is reinforced under the face segment on its under side with a piece of hardwood 31.

List of Reference Numerals

1	lute
2	sound box
3	tip
4	neck
5	fingerboard
6	peg box
7	back
8	rim
9	side of neck
10	side of neck
11	plane
12	face
13	edge
14	top
15	end piece
16	centerline
17	string
18	aperture
19	rose
20	camber
21	unribbed area
22	first part
23	second part
24	region of edge
25	edge region
26	edge region
27	lath
28	mid-length axis
29	transverse rib
30	safety rib
31	hardwood piece

Lute

Claims

1. Lute having a bulging sound box tapering down to a virtual point and a neck attached to one side of the point comprising a fingerboard fretted and bearing a peg box at its free end, the sound box consisting of a vaulted back whose rim is everywhere curved outward on its way from one side of the neck to the other side and lying in a plane, and of a face whose edge is connected to the rim of the back, provided on its under side facing the back with laths and transverse ribs, provided on its top opposed to the under side with an end piece connected to the face in the third of a face centerline farthest removed from the neck along said centerline and in its lengthwise extent transverse to said centerline, several strings being stretched between the peg box and the end piece, and that in the half of the centerline nearest the neck one or more apertures are made between the upper and the under side, **characterized** in that the face (12) including the tailpiece (15) is vaulted outward, the greatest distance (20) of the vaulted face above the plane (11) being at least 2 mm, and in that on the under side of the face (12) an area (21) free from transverse ribs is provided, corresponding to a first part (22) more or less between the tailpiece (15) and the area (24) of the rim (13) and a second part (23) of about the same size bordering on the first part between the mutually opposed rim portions (25; 26), said area free from transverse ribs being at the same time configured as a lath-free area (21) or provided with laths (27) in centrally symmetrical arrangement.
2. Lute according to claim 1, characterized in that the laths (27) run substantially in the direction of the lengthwise extent of the centerline (16).

3. Lute according to claim 1 or 2, characterized in that the laths (27) run at an acute angle to the direction of the lengthwise extent of the centerline (16).

4. Lute according to any of claims 1 to 3, characterized in that the laths (27) run fan shaped in such manner that their mid-length axes (28) intersect at an imaginary point on the centerline (16) of the face (12) or its prolongation in the direction of the neck (4).

5. Lute according to either of claims 1 and 2, characterized in that the laths (27) run parallel to the centerline (16).

6. Lute according to any of claims 1 to 5, characterized in that an even number of laths (27) is provided.

7. Lute according to any of claims 1 to 5, characterized in that an odd number of laths (27) is provided.

8. Lute according to any of claims 1 to 6, characterized in that the thickness of the face (12) diminishes, at least in the region of the rib-free area (21), towards the rim (13).

9. Lute according to any of claims 1 to 7, characterized in that the ends of the transverse ribs (29) rest on abutments.

10. Lute according to any of claims 1 to 8, characterized in that at least two laths pass without contact beneath at least that transverse rib which lies closest to the rib-free area (21), where the transverse ribs comprise a tunnel-shaped recess together with said laths at the point of intersection.

11. Lute according to any of claims 1 to 9, characterized in that the fingerboard (5) is prolonged by a face segment on the face (12) and in that the arrangement of the frets is continued on the face segment.

12. Lute according to claim 10, characterized in that the face (12) is reinforced on its under side with a piece of hardwood (31) in the region of the face segment.

13. Lute according to any of claims 1 to 11, characterized in that eight strings (17) are strung, tuned C - D - E - A - d - g - h - e'.

14. Lute according to any of claims 1 to 11, characterized in that fifteen single strings are strung, tuned G - A - B - C - D - E - F - G - A - B - d - f - a - d' - f', or G - A - B - C - D - E - F - G - A - B - d - f - a - d' - g'.

EXAMINATION REPORT - SUPPLEMENTARY SHEET

V.

1. Reference is made to the following document:

D1: US-A 4,291,606

2. The subject of Claim 1, for the following reasons, meets the requirements of Article 33(1) PCT.

Document D1 (col. 3, line 33, to col. 4, line 19; Figs. 1, 2, 8), regarded as proximate prior art for the subject of the instant application, to which the references bracketed below pertain, discloses what are regarded as the essential features of the generic clause of Claim 1, specifically a

Lute,

having a sound box (20) consisting of a back (36) and a face (22), and a neck (40) comprising a fingerboard (38) provided with frets (37) and bearing a peg box (48),

the face (22) being provided on its under side (see Fig. 8 and col. 3, line 63, to col. 4, line 3) with laths (60) and transverse ribs (61), and on its upper side (see Figs. 1, 2) with an end piece (26), and further comprises at least one aperture (34) between the upper and under sides, as well as

a plurality of strings (30) being strung between the peg box (48) and the end piece (26) (Fig. 1).

The subject of Claim 1 is distinguished from the disclosure of document D1 substantially in that the face including the end piece is vaulted outward and in that, on the under side of the face, a rib-free area is provided, either configured as a lath-free area or provided with laths arranged centrally symmetrical.

The subject of Claim 1 is therefore novel (Art. 33(2) PCT).

The object to be accomplished by the present invention, in agreement with the object indicated in the application on page 4 of the description, lines 20-25, may be seen in so further developing the sufficiently well-known lute that it will be accessible to present-day guitarists, while retaining its tonal properties.

The solution proposed for this problem in Claim 1 of the instant application is based, for the following reasons, on an inventive contribution (Art. 33(3) PCT).

In the available prior art, there is hardly any reference to be found to the stated problem to which the invention is addressed. Thus document D1, by way of example, chiefly proposes providing the lute with an additional means permitting an identification of notes (cf. lines 46-48 in col. 1).

Against this background, it is not surprising that there is no hint to be found in the prior art that might have led the skilled in obvious manner to the teaching of the invention according to Claim 1.

True, US-A 4,031,798 addresses the problem of simplifying the lute player's task in such manner as to match that of a guitarist. Besides, according to lines 30-33 in col. 2, the classic tonal properties of the lute are to be retained.

In this case, however, the problem is solved with a non-homogeneous sound box, having different sound transmission properties in radial direction than in circumferential direction. This may be regarded as an alternative solution to the

teaching according to the invention. The face 20 of this lute (cf. Fig. 3), however, is plane, like that of the other known bowed instruments.

The other printed sources named in the International Search Report, all ranked as technological background, come no closer to the subject matter of Claim 1 than the aforementioned document D1.

Furthermore, it may be stated that a combination of a lute with a (concert) guitar, as known for example from DE-U 88 08 073 named in the application on page 4, line 16, does not lead those skilled in the art to the subject of Claim 1, for such guitars likewise have a plane face.

The stringed instrument disclosed by the US-A 1,361,182 named on page 4, 2nd paragraph comprises a sound box whose two opposed walls 9 are in fact vaulted outward.

Aside from the fact that the end piece of this instrument is not vaulted outward, the face is provided neither with laths nor with transverse ribs on its under side. Since, moreover, this instrument is a mandolin, one skilled in the art in solving the above-mentioned problem, which after all is limited to lutes and guitars, would not consult that source.

For this reason, the subject matter of Claim 1 is not suggested by the available prior art, and hence is due to an inventive contribution in the sense of Art. 33(3) PCT.

3. Claims 2 to 14 are dependent on Claim 1, and therefore likewise satisfy the PCT requirements with respect to novelty and inventiveness.

VII.

The features of the generic clause of Claim 1 should likewise have been furnished with parenthesized reference numerals (PCT rule 6.2 b).



A 35040-PCT-USA-066340.0143

SUBSTITUTE SPECIFICATION

Lute

BACKGROUND OF THE INVENTION

[0001] The invention relates to a lute having a bulging sound box tapering to a virtual point and a neck attached to the so-called stock or upper block to one side of the point. The neck comprises a fingerboard furnished with frets. At its free end, the neck bears a peg box. The sound box consists of the vaulted back of the lute, its rim always curved outward from one side of the neck to the other and lying in a plane. The sound box comprises a face whose edge is connected to the rim of the back. The face, on its under side towards the back of the lute, is provided with spreaders or fan beams, hereinafter referred to as laths, and transverse ribs. On its top, opposed to the under side, the face is furnished with a tailpiece, connected to the third of the face centerline farthest removed from the neck and in its lengthwise extent transverse to the centerline. Between the peg box and the tailpiece, a plurality of strings are stretched. In the half of the centerline near the neck, in the region of the strings, one or more apertures are made between the upper and under side of the face.

[0002] In Claus Martius, *Leopold Widhalm und der Nürnberger Lauten- und Geigenbau im 18. Jh.*, a publication of the Institute for Synthetics Technology and Conservation in the Germanic National Museum, vol. 4, Verlag Erwin Bochinski 1996, we have the latest stage of development of the lute in the 18th Century. A lute, then, has a bulging sound box tapering down to a virtual

point, where a neck is attached. As part of the generally known prior art, the neck comprises a fingerboard furnished with frets and bearing a peg box at its free end.

[0003] Concerning the lute dating from the 18th Century, it is known further that the sound box consists of the vaulted back of the lute, its rim always curved outwardly from one side of the neck to the other. The edge of the back lies in a plane. The back of the lute is covered with a face whose edge is connected to the rim of the back.

[0004] The face, like almost all parts of the lute, is made of wood. The direction of the grain of the face is parallel to its centerline. This means that new and old wood in the face form nearly straight stripes, substantially parallel to the centerline of the face.

[0005] The familiar lute is provided with seven transverse ribs, lying transverse to the centerline and hence in particular transverse to the grain of the wood of the face. Thus, the preponderant area of the under side of the face is provided with transverse ribs. In about a quarter of the area of the under side of the face away from the neck there are provided fan ribs. The axis of these fan ribs have -- if any -- a common point of intersection, located in the third of the centerline of the face furthest removed from the neck.

[0006] Specifically, an approximately common point of intersection lies in the neighborhood of a tailpiece arranged on the top of the face. In fact, this tailpiece is located in the third of the face centerline farthest removed from the neck. It is connected to the face on this centerline and in its lengthwise extent transverse to the centerline. Between the peg box and the tailpiece, several strings are stretched. The classic stringing consists of 13 strings tuned A - B - C - D - E - F - G - A - d - f - a - d' - f'. The first ten of these strings are double. Only the d' and f' strings are single.

[0007] From José L. Romanillos, *Antonio de Torres, Ein Gitarrenbauer - Sein Leben und Werk*, Verlag Erwin Bochinski, we learn of Antonio de Torres' construction of about 1850, still used for concert guitars today. Such a guitar comprises a face and a back, connected to each other by a frame. The frame has a pronounced waist, so that both face and back follow this conformation. In the neighborhood of the waist, a transverse rib is arranged. In addition to two more transverse ribs in the part of the face near the neck, this known guitar is also provided with two oblique laths in the part distant from the neck. Between these oblique laths and the ribs in the waist area of the guitar, additional laths or so-called fan ribs are arranged, the parts designated as laths occupying only about 1/10 of the cross-sectional area of the parts referred to as ribs. About in the middle between waist and far end of the guitar, the end piece is attached to the top of the face. Between the end piece and the peg box located at its free end, six strings tuned E - A - d - g - h - e' are stretched.

[0008] The present-day guitar, developed in Spain in the middle of the 19th Century, is undoubtedly one of the most popular musical instruments of the age.

[0009] Nevertheless, for European music it represents only a stand-in for the lute.

[0010] Since the 15th Century, the lute has become one of the most important tonal implements of western musical literature. Many famed composers left works behind that had been written for the lute. But these works today can hardly or only inadequately be rendered on the guitar acting as stand-in, for which reason they have largely lapsed into oblivion.

[0011] The reason for the displacement of the lute from today's orchestras is to be found in that nearly all orchestral instruments have accomplished a definite development in the past few

centuries, while the lute has not. As a result, the lute lacks volume, it is very complicated to play, has limited expressiveness and an antiquated notation.

[0012] In printed source US 1,361,182, a stringed instrument is described that comprises a body having a substantially closed frame around an upper and an under side. However, the upper and under sides are each convexly vaulted. This instrument has no transverse ribs or laths, and the body departs from the typical lute shape, so that this instrument will yield a sound differing distinctly from that of the lute.

[0013] German Utility Design G 88 08 073.0 describes an instrument representing the structure of a guitar as described above.

[0014] The object of this invention, then, is to lend the lute a conformation such that it will meet modern concert conditions and become accessible, while retaining its outstanding tonal properties, to present-day guitarists, thus making possible a reintegration of the lute into the orchestral apparatus of today.

SUMMARY OF THE INVENTION

[0015] According to the invention, the face of the lute, including the end piece, is vaulted outward, the greatest distance of the vaulted face above the plane being at least 2 mm. In addition, on the underside of the face, a space clear of transverse ribs is provided, corresponding to a first segment, between the end piece and the part of the rim away from the neck, and a second segment adjacent to the first and of about the same size between the mutually opposed rims. Thus, the area free from transverse ribs is either at the same time a lath-free area, or provided with laths arranged in central symmetry. By virtue of the face curvature, the lute is

endowed with a stability dispensing with any heavy stiffening of the face. It thus becomes possible to set this face area in vibration more readily, improving the access of sound to the instrument.

[0016] Ideally, the area on the under side of the face located below the end piece should have little if any lathing, to avoid impeding acoustic access or propagation.

[0017] In a favorable embodiment of the invention, provision is made so that the lathing, if present, consists of laths running substantially parallel to the centerline.

[0018] The laths may run at an acute angle to the direction of the centerline. What is meant here by the run of the laths is that their centerlines make at most an angle of less than 45° with the centerline.

[0019] In a possible embodiment of the invention, provision is made for the laths to run fan-shaped in such manner that their mid-length axes intersect at an imaginary point on the centerline of the face or its prolongation towards the neck.

[0020] Alternatively, it is also possible that the laths may run parallel to the centerline.

[0021] In another embodiment of the invention, an even number of laths is provided. The effect of this is to leave the centerline unlathed.

[0022] In another embodiment of the invention, an odd number of laths is provided.

[0023] Since the laths are in principle arranged symmetrically to the centerline of the face, an odd number of laths will ensure that the centerline itself is always lathed.

[0024] As odd numbers, the numbers three, five, seven and nine are especially suitable numbers of laths.

[0025] In an advantageous embodiment of the invention, provision is made for the thickness of the face, at least in the region of the area free from transverse ribs, to diminish towards the edge. This will achieve a higher fundamental component of bass sounds.

[0026] In principle, such a lathing will make possible a more uniform transmission of sound from the end piece to the face.

[0027] In still another embodiment of the invention, provision is made for the ends of the transverse ribs to rest on abutments.

[0028] The invention may also be further developed in that at least two laths run under, without contact, at least that transverse rib which lies closest to the unribbed area. This is accomplished in that the rib comprises a tunnel-shaped recess at the intersection between rib and lath. This avoids contact between lath and rib, and affords passage of sound by way of the laths also into that part of the area which is provided with ribs.

[0029] In still another embodiment of the invention, provision is made for the fingerboard to be prolonged by a face segment on the face. On this segment, the arrangement of the frets is continued. Owing to this arrangement, it is possible for the higher strings to be playable with higher tones as well.

[0030] In this embodiment, it is expedient to reinforce the face in the neighborhood of the face segment with a piece of hardwood on its under side. For in the first place, this enhances the mechanical stability of the face in this area, which is expedient, since playing of the strings will

exert a not inconsiderable pressure on this part of the face. In the second place, it also strengthens the acoustic access of the strings by way of the face, since just when the higher strings are played with higher tone, the oscillatory bulk of the strings and hence their volume is very low, especially if the face is yielding in this segment.

[0031] In yet another embodiment of the invention, provision is made for eight strings to be stretched on the lute, with tuning C - D - E - A - d - g - h - e'. With such a stringing, it becomes possible to play all guitar music since 1800, as well as modern music. If in addition, the g-string is tuned down a half-step to fis, it becomes possible also to play all the lute music from 1450 to 1630.

[0032] Alternatively to this stringing, it is possible to string the lute with fifteen single strings, tuned G - A - B - C - D - E - F - G - A - B - d - f - a - d' - f, or else

G - A - B - C - D - E - F - G - A - B - d - f - a - d' - g'. Such a stringing yields the possibility of playing the entire lute music in the period between 1630 and 1800, parts of the guitar repertory, music of the 19th and 20th Centuries, parts of the lute music repertoires from 1450 to 1630, as well as present-day compositions.

[0033] The invention will now be illustrated in more detail in terms of an embodiment by way of example.

DESCRIPTION OF THE DRAWINGS

[0034] Fig. 1 shows a side view of a lute according to an embodiment of the invention,

[0035] Fig. 2 shows a top view of the under side of the face of the lute according to an embodiment of the invention,

[0036] Fig. 3 shows a longitudinal section of the lute according to an embodiment of the invention.

DESCRIPTION OF THE INVENTION

[0037] As shown in the drawings, the lute 1 comprises a bulging sound box 2. This is shaped so that it tapers down to a virtual tip 3. At the tip 3, a neck 4 is attached. This neck 4 comprises a fingerboard 5, provided with frets not explicitly shown. At its free end, the neck 4 bears a peg box 6.

[0038] The sound box 2 itself consists of a vaulted lute back 7. The rim 8 of the back 7 is always curved outward from one side 9 of the neck 4 and the other side 10. Also, the rim 9 lies on a plane, indicated by reference numeral 11 in Fig. 3. Further, the sound box 2 consists of a face 12 whose edge 13 is connected to the rim 8 of the back 7.

[0039] On its top 14, the face 12 is provided with an end piece 15. The end piece 15 is arranged on a centerline 16 of the face 12, to wit, in its lengthwise extent transverse to the centerline 16. In this position, the end piece 15 is connected to the face 12, for example by means of a bonded connection.

[0040] Between the peg box 6 and the end piece 15, several strings 17 are stretched. On the neck half of the centerline 16, in the region of the strings 17, an aperture 18 is made in the face 12, closed with a rose 19 in such manner as to form numerous small openings.

[0041] As may be seen especially in Fig. 3, the face 12 including the endpiece 15 is vaulted over a camber 20. This camber, in the embodiment of this example, amounts to 2 mm or more.

[0042] On the under side of the face 12, an area 21 free from transverse ribs is provided. This ribless area 21 consists of first part 22 and a second part 23. The first part extends between the end piece 15 and the end 24 of the rim 13 away from the neck. The second part 23 borders on the first part 22 and is about the same centerline length as the first part 22. The second part extends between mutually opposed edge portions 25 and 26.

[0043] On the area 21 free from ribs, laths 27 are arranged with central symmetry. Their mid-length axes 28 intersect at an imaginary point on the prolongation of the centerline 16 towards the neck 4.

[0044] All told, seven laths 27 are provided in the illustrated embodiment, by way of example. However, an even number of laths 27 is also possible. In the remaining area of the under side of the face, five transverse ribs 29 are arranged. The rose 19 is secured against being pushed in by small safety ribs 30.

[0045] The fingerboard 5 is prolonged by a face segment on the face 12. The face segment is fretted. As may be seen in Fig. 2 and Fig. 3, the face 12 is reinforced under the face segment on its under side with a piece of hardwood 31.

[0046] While there have been described what are believed to be the preferred embodiments of the invention those skilled in the art will recognize that other changes and modifications may be made thereto without departing from the spirit of the invention, and it is intended to claim all such changes and modifications as fall within the true scope of the invention.

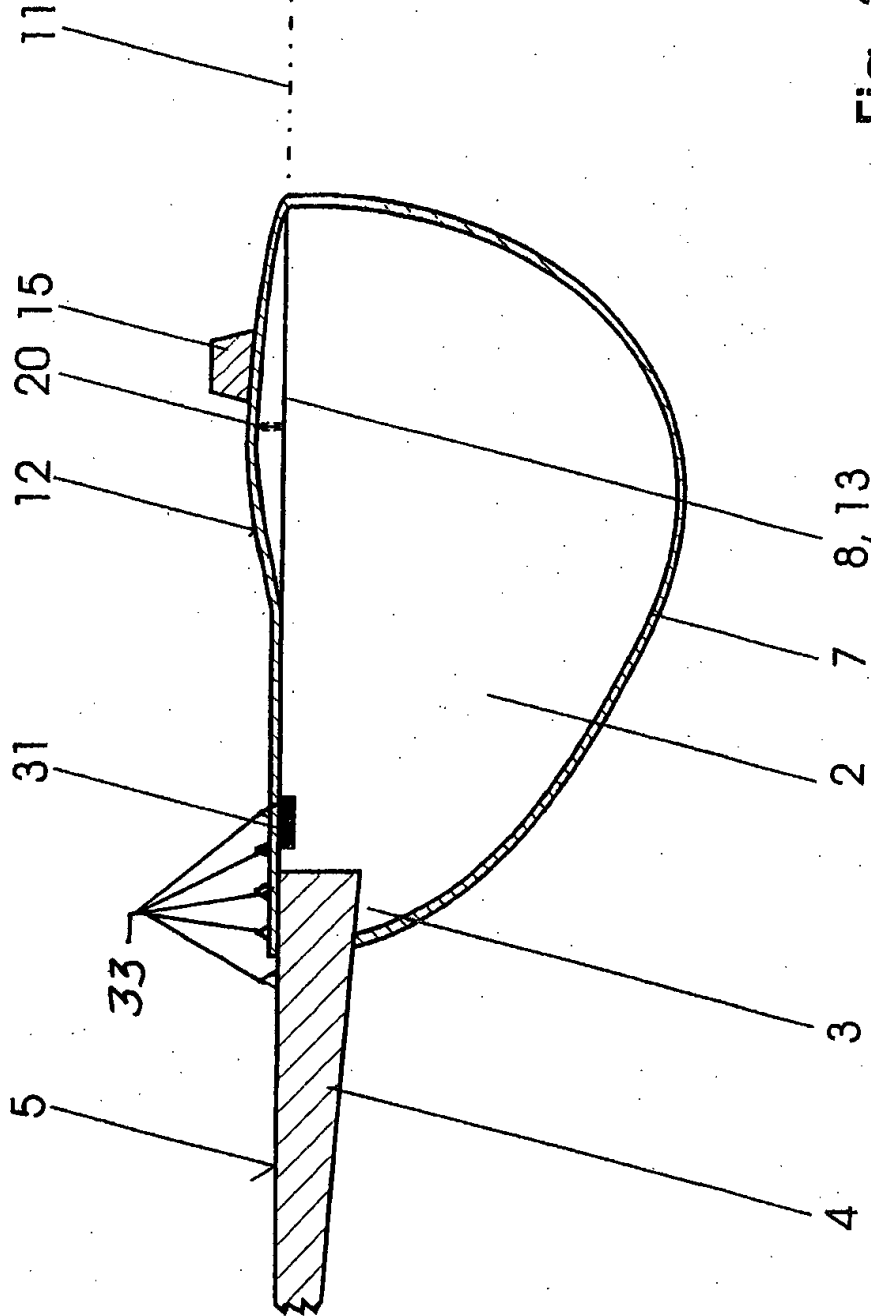


Fig. 3

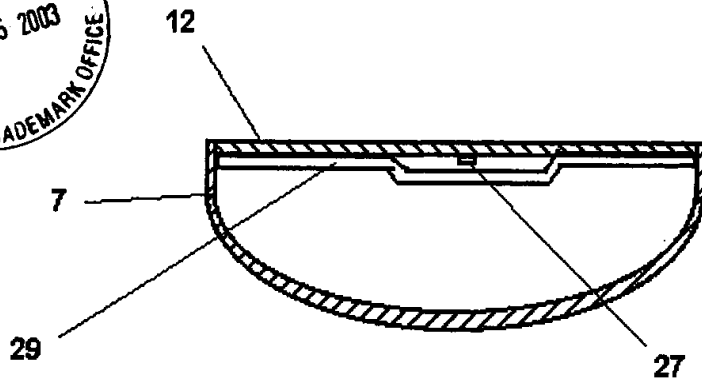


Fig. 4